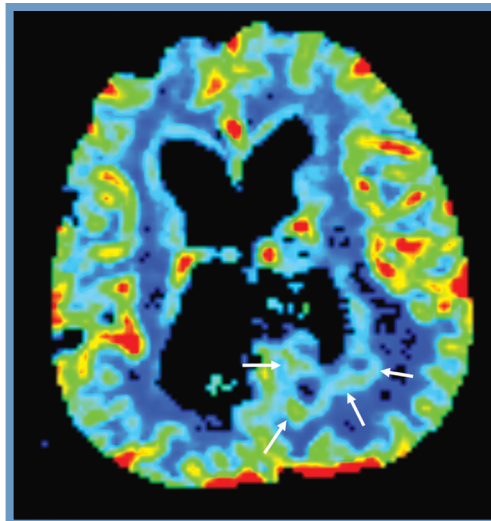
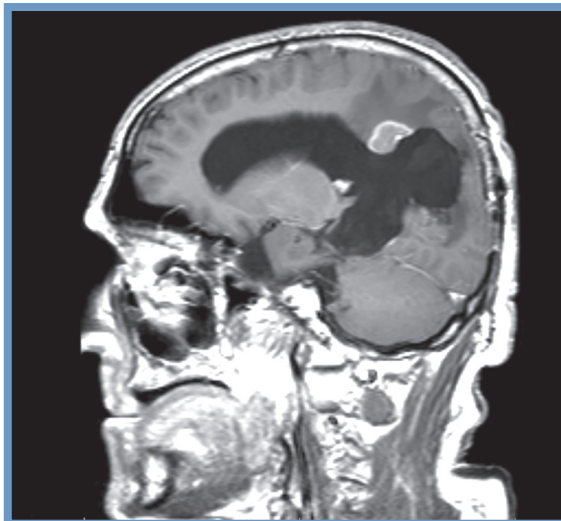
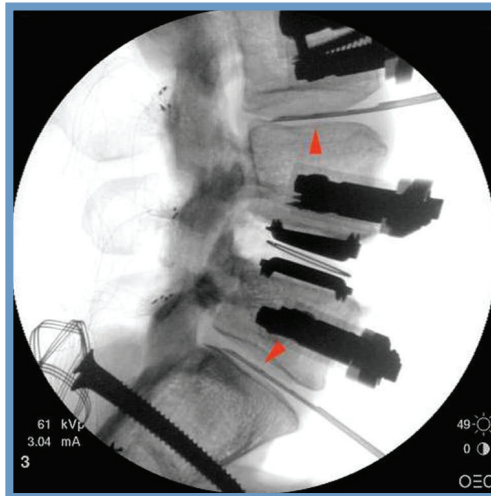
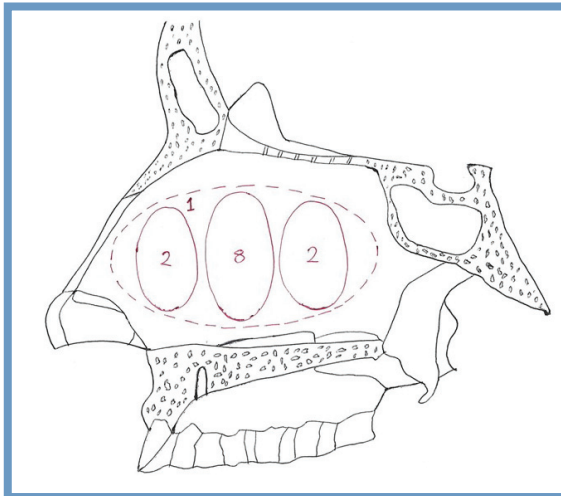




Turkish Neurosurgery

Official Journal of the Turkish Neurosurgical Society





Turkish Neurosurgery

Official Journal of the Turkish Neurosurgical Society

TURKISH NEUROSURGICAL SOCIETY

Volume: 27 Number: 2 Year: 2017

www.turkishneurosurgery.org.tr

PRESIDENTS

Nurhan Avman	1985-1986
Aykut Erbenli	1986-1987
Özdemir Gürçay	1988-1988
Tunçalp Özgen	1988-1989
Yücel Kanpolat	1989-1990
Osman E. Özcan	1990-1992
Ertekin Arasil	1992-1993
Yamaç Taşkın	1993-1995
Yücel Kanpolat	1995-1996
Nur Altınörs	1996-1997
M. Kemali Baykaner	1997-1998
Kaya Aksoy	1998-2000
Necmettin Pamir	2000-2002
Nurcan Özdamar	2002-2004
Selçuk Palaoğlu	2004-2006
Mehmet Zileli	2006-2008
Ethem Beşkonaklı	2008-2010
Murad Bavbek	2010-2012
Uğur Türe	2012-2014
Zeki Şekerci	2014-2016
Talat Kırış	2016-

EDITORS

Tunçalp Özgen	1989-1989
Yücel Kanpolat	1989-1990
Osman E. Özcan	1990-1992
Selçuk Palaoğlu	1992-1994
Nur Altınörs	1994-1995
Selçuk Palaoğlu	1995-1996
Zafer Kars	1996-1998
Kaya Aksoy	1998-2000
Murad Bavbek	2000-2003
Erdener Timurkaynak	2003-2004
Kemal Benli	2004-2006
Hakan Caner	2007-2013
Deniz Belen	2014-2015
Talat Kırış	2015-2016
Selçuk Peker	2016-

Turkish Neurosurgery is indexing in:
SCIENCE CITATION INDEX EXPANDED
INDEX MEDICUS, MEDLINE, PubMed,
Scopus

Impact Factor : 0.508
5yr-Impact Factor : 0.736

ISI Web of KnowledgeSM, Journal Citation
Reports[®], 2015 JCR Science Edition

Editor-in-Chief:

Selçuk Peker : peker@selcukpeker.com

Editors of Sections:

Dattatraya Muzumdar (Editor of Neurooncology Section)	: dmuzumdar@hotmail.com
Hidenori Kobayashi (Editor of Cerebrovascular Section)	: hidek-fchs@kbh.biglobe.ne.jp
Gianpiero Tamburrini (Editor of Pediatric Neurosurgery Section)	: gianpiero.tamburrini@rm.unicatt.it
R. Kemal Koç (Editor of Spinal Surgery Section)	: kocrk@erciyes.edu.tr
Ahmet Bekar (Editor of Functional Neurosurgery Section)	: dr_ahmet_bekar@hotmail.com
Andreas Unterberg (Editor of Neurotrauma Section)	: andreas.unterberg@med.uni-heidelberg.de

Associate Editors:

Selim Ayhan : selim_ayhan@yahoo.com	Hakan Karabağlı : hakankarabagli@yahoo.com
Hakan Emmez : hakanemmez@gmail.com	Hayri Kertmen : hayri_kertmen@yahoo.com
Yusuf İzci : yusufizci@yahoo.com	

Medical Ethics Advisor:

Dr. Nesrin Çobanoğlu

ADVISORY BOARD

Aviva Abosch, USA	Murat Günel, USA	Necmettin Pamir, Turkey
Feridun Acar, Turkey	Murat Hancı, Turkey	Lukas Rasulic, Serbia
Gökhan Akdemir, Turkey	Juha Hernesniemi, Finland	Guilherme Carvalhal Ribas, Brasil
Nejat Akalan, Turkey	Servet İnci, Turkey	Concezio Di Rocco, Italy
Ossama Al-Mefty, USA	Juha E Jääskeläinen, Finland	James T. Rutka, Canada
Nur Altınörs, Turkey	Erkan Kaptanoğlu, Turkey	Burak Sade, Turkey
Nuri Arda, Turkey	Feyza Karagöz Güzey, Turkey	Madjid Samii, Germany
Ali Arslantaş, Turkey	Takesi Kawase, Japan	Ali Savaş, Turkey
Emel Avci, Turkey	Andrew H. Kaye, Australia	Daniel Sciubba, USA
Şükrü Aykol, Turkey	Memduh Kaymaz, Turkey	Laligam Sekhar, USA
Mustafa K. Başkaya, USA	M. Yaşar Kaynar, Turkey	Nathan Selden, USA
Murad Bavbek, Turkey	Evren Keleş, Turkey	Franco Servadei, Italy
Ahmet Bekar, Turkey	Douglas Kondziolka, USA	İhsan Solaroğlu, Turkey
Ahmet Deniz Belen, Turkey	Kadir Kotil, Turkey	Robert F. Spetzler, USA
Edward C. Benzel, USA	Basant Kumar Misra, India	Alparlan Şenel, Turkey
Mustafa Berker, Turkey	Boris Krischek, Germany	Sait Şirin, Turkey
Ethem Beşkonaklı, Turkey	Ali Krisht, USA	Necmettin Tannöver, Turkey
Luis Borba, Brasil	Christer Lindquist, United Kingdom	Morcos Tatagiba, Germany
Kim Burchiel, USA	L. Dade Lunsford, USA	Yasin Temel, The Netherlands
Paolo Capabianca, Italy	Jacques Morcos, USA	Nicolas De Tribolet, Switzerland
Fady Charbel, USA	Melike Mut, Turkey	Uğur Türe, Turkey
Şükrü Çağlar, Turkey	Sait Naderi, Turkey	Tanju Uçar, Turkey
Mehmet Daneyemez, Turkey	Evandro de Oliveira, Brasil	Ağahan Ünlü, Turkey
Gilbert Deschambenoit, France	Kenji Ohata, Japan	Peter Vajkoczy, Germany
İlhan Elmacı, Turkey	Nezih Oktar, Turkey	M. Gazi Yaşargil, USA
Micheal Fehlings, Canada	Fahir Özer, Turkey	Selçuk Yılmazlar, Turkey
Atul Goel, India	Selçuk Palaoğlu, Turkey	Mehmet Zileli, Turkey
Ziya Gökaslan, USA		İbrahim M. Ziyal, Turkey

Redaction: Dr. Aydın Yuluğ, Aytaç Yıldızeli

Secretary : Mukadder Karakaya Çerçi, Nurhan Şen

Plagiarism Report: Hüseyin Körpeoğlu

Web site design: Pleksus Information Technology

Turkish Neurosurgery

Volume: 27 Number: 2 Year: 2017

Official Journal of the Turkish Neurosurgical Society

Turkish Neurosurgery is published six times per year by the Turkish Neurosurgical Society (January, March, May, July, September, and November)

Owned and controlled by the Turkish Neurosurgical Society

Copyright owner on behalf of the Turkish Neurosurgical Society:

Talat KIRIŞ

Publishing Manager:

Tanju UÇAR

Key title: Turkish Neurosurgery

Abbreviated key title: Turk Neurosurg

www.turkishneurosurgery.org.tr

ISSN: 1019-5149

NLM ID: 9423821

Subscription: Sent free to the Turkish Neurosurgical Society members.

Non-members should contact: editor@turkishneurosurgery.org.tr

2017 Non-member Subscription Rates:

Within Turkey 300 TL, Outside Turkey 100 Euro

Publishing Services

BULUŞ DESIGN AND PRINTING SERVICES COMPANY

Bahriye Üçok Caddesi 9/1 Beşevler, 06500 Ankara, Turkey

Phone: +90 312 222 44 06 Fax: +90 312 222 44 07

www.bulustasarim.com.tr

Advertisement: editor@turkishneurosurgery.org.tr

Printed at

Sonsöz Gazetecilik ve Matbaacılık Tic. Ltd. Şti.

Matbaacılar Sanayi Sitesi 35. Cadde, No: 56 İvedik, Ankara, Turkey

Phone: +90 312 394 57 71

This issue is published as: 1450 copies.

Printing Date: 28.02.2017

Cover picture: Postalci, p. 183; Choi, p. 254; Ozutemiz, p. 313, 314

Turkish Neurosurgical Society

Taşkent Caddesi 13/4 06500 Bahçelievler, Ankara/TURKEY

Phone: +90 312 212 64 08 Fax : +90 312 215 46 26 E-mail: info@turknorosirurji.org.tr

www.turknorosirurji.org.tr www.turkishneurosurgery.org.tr

Review of the articles in the journal to make sure they conform to publishing standards, typesetting, the review of English abstract and sources, getting the journal ready for publication and finally the publishing process has been the responsibility of Buluş Design and Printing Services Company.

The paper used to print this journal conforms to ISO 9706: 1994 standard (Requirements for Permanence).

The National Library of Medicine suggests that biomedical publications be printed on acid-free paper (alkaline paper).



ENVIRONMENTAL INFORMATION

The company that manufactures the paper used in this journal has an ISO 14001 environmental management certificate. The company obtains all wood fiber in a sustainable manner. The forests and plantations of the company are certified. The water used in production is purified and used after recovery.

Heavy metals or film are not used for the publication of this journal. The fluids used for developing the aluminum printing templates are purified. The templates are recycled. The inks used for printing do not contain toxic heavy metals.

This journal can be recycled. Please dispose of it in recycling containers.

INSTRUCTION TO THE AUTHORS

Turkish Neurosurgery is a peer-reviewed, multidisciplinary journal directed at an audience of neurosurgery physicians and scientists. The official language of the journal is *English*. The journal publishes original articles in the form of clinical and basic research. *Turkish Neurosurgery* will only publish studies that have institutional review board (IRB) approval and have strictly observed a sufficient follow-up period. With the exception of reference presentation, *Turkish Neurosurgery* requires that all manuscripts be prepared in accordance with the *Uniform Requirements for Manuscripts Submitted to Biomedical Journals*.

Turkish Neurosurgery periodically publishes the following papers: Turkish Neuro-Excursion, Original Investigation (Clinical and Experimental Studies), Review Article, Case Report, Case Illustration, Technical Note, Historical Perspective and Letter to the Editor.

Manuscript Submission

Authors are to submit their manuscripts through the Web-based tracking system at <http://www.turkishneurosurgery.org.tr>. The site contains instructions and advice on how to submit manuscripts, guidance on the creation/scanning and saving of electronic art, and supporting documentation. In addition to allowing authors to submit manuscripts on the web, the site allows authors to follow the progression of their manuscript through the peer review process. Authors who submit their manuscripts through the web-based tracking system are asked not to send hard copies of the manuscript to the editorial office. Please address all inquiries regarding manuscripts not yet accepted or published to the Journal's editorial office. The editorial office will acknowledge receipt of your manuscript and will send you a manuscript number for reference.

Revised Submission

Author's comments to the reviewers are required for revised submissions. Authors must address the reviewer's concerns/suggestions and whether the change was made or not. Authors must also highlight the changes made within the text. Do not track the additions or deletions to the manuscript. If the Authors do not want to revise the manuscript within a period of *two months* the manuscript will automatically be declined.

Patient anonymity and informed consent: It is the author's responsibility to ensure that a patient's anonymity is carefully protected and to verify that any experimental investigation with human subjects reported in the manuscript was performed with informed consent and followed all the guidelines for experimental studies with human subjects required by the institution(s) with which all the authors are affiliated. Authors should mask patients' eyes, private parts and remove patients' names from all figures.

Copyright: All authors must sign a copy of the Journal's **"Copyright Transfer/Conflict of Interest and Device Status**

Form" and submit it to the Editorial Office if the manuscript is accepted for publication in Turkish Neurosurgery. The authors of all published material must sign this form at the time of manuscript acceptance.

Permissions: Authors must submit written permission from the copyright owner (usually the publisher) to use direct quotations, tables, or illustrations that have appeared in copyrighted form elsewhere, along with complete details about the source. Any permissions fees that might be required by the copyright owner are the responsibility of the authors requesting use of the borrowed material and not the Turkish Neurosurgical Society.

Preparation of Manuscript

Manuscripts that do not adhere to the following instructions **WILL BE RETURNED** to the corresponding author for technical revision before undergoing peer review.

General format: All manuscripts should be submitted in English, and formatted for standard 8 1/2 x 11-inch (21 x 28-cm) paper with at least a 1-inch (2.5 cm) margin on all sides and double-spaced.

Style: *Pattern manuscript style after the American Medical Association Manual of Style (9th edition), Stedman's Medical Dictionary (27th edition) and Merriam Webster's Collegiate Dictionary (10th edition)* should be used as standard references. Refer to drugs and therapeutic agents by their accepted generic or chemical names, and do not abbreviate them. Use code numbers only when a generic name is not yet available. In that case, supply the chemical name and a figure giving the chemical structure of the drug. Capitalize the trade names of drugs and place them in parentheses after the generic names. To comply with trademark law, include the name and location (city and state in USA; city and country outside USA) of the manufacturer of any drug, supply, or equipment mentioned in the manuscript. Use the metric system to express the units of measure and degrees Celsius to express temperatures, and SI units rather than conventional units.

Submit the manuscript electronically via:

<http://www.turkishneurosurgery.org.tr> in the following order:

- 1) **Title page:** The title page should include:
 - (a) complete manuscript title (brief, definite and didactic),
 - (b) authors' full names, highest academic degrees, and affiliations,
 - (c) name and address for correspondence, including fax number, telephone number, and e-mail address,
 - (d) address for reprints if different from that of corresponding author,

- (e) sources of support that require acknowledgement,
- (f) any other acknowledgement the authors wish to include. Please verify that the spelling, order, and affiliation of each author are correct.
- (g) the title page must be uploaded as a separate file

The Journal is not responsible for published misspelled names due to author error.

A Running Head should also appear in the title page. The running head should be no more than three to five words from the title, and should NOT include the authors' names.

2) Structured Abstract and Key Words.

The following subheads must be included in the Structured Abstract *only for clinical and experimental research papers*: **Aim (Background), Material and Methods, Results, Conclusion.** Do not cite references in the abstract, and limit the use of abbreviations and acronyms. The structured abstract must be **no more than 250 words.**

List **three to five Key Words** after the *abstract*.

Abbreviations should be written after the keywords in the abstract. Abbreviations should be written within parentheses after writing the abbreviated phrase in full in the first instance in the text. They should be written without parentheses afterwards. For a list of standard abbreviations, consult the Council of Biology Editors Style Guide (available from the Council of Science Editors, 9650 Rockville Pike, Bethesda, MD 20814) or other standard sources.

It is not necessary to provide a structured abstract for submissions to the Turkish Neuro-Excursion, Review Article, Case Report, Case Illustration, Technical Note, Historical Perspective and Letter to the Editor sections.

3) Text: Organize the manuscript into five main headings:

Introduction, Material and Methods, Results, Discussion, and Conclusion.

For Clinical Trials, Experimental and Anatomic Studies as well as similar study designs, *please attach the Ethical Committee Approval Form to the manuscript submission.*

Define abbreviations at first mention in text and in each table and figure. If a brand name is cited, supply the manufacturer's name and address (city and state/country).

The number of words varies for different types of manuscripts:

Turkish Neuro-Excursion: The editor will invite connoisseurs for these special type of papers which may cover a broad spectrum in various fields of medicine, science, art, history, law as well as any important theme on actuality other than core neurosurgery. The number of words, figures, tables and references are not restricted.

Original Investigation, Review, and Historical Perspective:

The main text should not exceed 3500 words excluding the abstract, references, tables, and figure legends for original articles, including randomized controlled trials, observational (cohort, case-control or cross-sectional) studies, diagnostic accuracy studies, systematic reviews and meta-analyses, nonrandomized behavioral and public health intervention trials, experimental animal trials, or any other retrospective or prospective clinical or experimental studies and invited articles. The number of figures, tables, videos and references are not restricted. The specifications for video files are given at part 6.

Case Report: Word count must not exceed 1000 (excluding references, tables, and figure legends). Case reports cannot have more than 4 authors, 15 references, and 4 figures or tables.

Case Illustration: The number of words must not exceed 500 (excluding references, tables, and figure legends). There is a restriction for only 2 figures and 10 references.

Technical Note: The number of words must not exceed 1000, and there should not be more than 4 authors or 15 references. The number of figures and tables are not restricted.

Letter to the Editor: These can also be submitted through Editorial Manager. Letters should refer to the title and authors of a recent *Turkish Neurosurgery* article. The letter should be no longer than 300 words with no more than 3 references. Unpublished data should not be used. Letters to the Editor are sent to the article authors for response. The Editor-in-Chief makes the final decision on whether letters to the editor and the responses are published.

Terms: Do not use the term hardware. Acceptable substitutions include implants and instrumentation. Constructs or montage may be used if the reference is to a particular pattern of fixation points for the instrumentation.

4) References:

The authors are responsible for the accuracy of the references. Key the references (double-spaced) at the end of the manuscript. Cite references in text in *alphabetical order within parentheses*. Do not link the references to the text. Cite unpublished data, such as papers submitted but not yet accepted for publication or personal communications, in parentheses in the text. Do not use "et al" in the references. List all the authors of the reference. Refer to the List of Journals Indexed in Index Medicus for abbreviations of journal names, or access the list at

"<http://www.nlm.nih.gov/tsd/serials/lji.html>"

Sample references are given below:

A. Journal article

Guiot BH, Khoo LT, Fessler RG: A minimally invasive technique for decompression of the lumbar spine. *Turk Neurosurg* 27: 432-438, 2002

B. Additional example

Altınörs N, Kars Z, Arda N, Şenveli E, Türker A, Çınar N: Spinal extradural metastasis of medulloblastoma. *Turk Neurosurg Suppl* 1: 144, 1989

C. Book chapter

Sweitzer S, Arruda J, DeLeo J: The cytokine challenge: Methods for the detection of central cytokines in rodent models of persistent pain. In: Kruger L (ed), *Methods in Pain Research*. Boca Raton, FL: CRC Press, 2001: 109-132

D. Entire book

Atlas SW: *Magnetic Resonance Imaging of the Brain and Spine*. Philadelphia: Lippincott Williams & Wilkins, 2001

E. Example of thesis

Kanpolat Y: Experimental percutaneous access to the trigeminal ganglion and the histopathological evaluation of radiofrequency thermic lesion (Unpublished dissertation), Ankara: Ankara University, 1978:1- 52

F. Software

Epi Info [computer program]. Version 6. Atlanta: Centers for Disease Control and Prevention, 1994

G. Online journals

Friedman SA. Preeclampsia: A review of the role of prostaglandins. *Obstet Gynecol* [serial online]. January 1988;71:22-37. Available from: BRS Information Technologies, McLean, VA. Accessed December 15, 1990

H. Database

CANCERNET-PDQ [database online]. Bethesda, MD: National Cancer Institute, 1996. Updated March 29, 1996

I. World Wide Web

Gostin LO. Drug use and HIV/AIDS [JAMA HIV/AIDS web site]. June 1, 1996. Available at: <http://www.ama-assn.org/special/hiv/ethics>. Accessed June 26, 1997

5) Tables and Figures:

Tables: Create tables in **word format** using the table creating and editing feature of your word processing software. Do not use Excel or comparable spreadsheet programs. **Tables should not exceed page width of 41 picas or 17.5 cm.** Supply tables together in a separate file. Cite tables consecutively in the text, and number them in that order. Key each on a separate sheet, include the table title, appropriate column heads, and explanatory legends (including definitions of any abbreviations used). **Do not embed tables within the body of the manuscript.** They should be self-explanatory and should supplement, rather than duplicate, the material in the text.

Digital Figures: All electronic art can be submitted through the Web-based tracking system

“<http://www.turkishneurosurgery.org.tr>”

A. Format: Electronic art should be created/scanned and saved and submitted either as a **JPEG file**.

B. Sizing and Resolution:

Line art must have a resolution of at least 1200 dpi (dots per inch).

Electronic photographs, radiographs, CT scans, and scanned images must have a resolution of at least 300 dpi.

Figures should be sized to fit either 1 column (20 picas/8.4 cm), 1 1/2 columns (30 picas/12.65 cm OR 2 columns (41 picas/17.5 cm) on a page.

Sizing and Resolution can be checked through the related web-based programs or softwares.

C. Fonts: If fonts are used in the artwork, they must be converted to paths or outlines or they must be embedded in the files. Fonts must be 8 pt and be sized consistently throughout the artwork. The best font to use is Helvetica.

Figure legends: Legends must be submitted for all figures. They should be brief and specific and less than 150 characters or approximately 50 words. List figure legends on a separate page at the end of the manuscript text.

Color figures: The journal accepts color figures with free of charge which will enhance the quality of an article.

6) Videos:

Videos will be published as a part of manuscripts. Videoclips must be the property of author(s). The copyright issues are similar to the other parts of the Turkish Neurosurgery Journal that was aforementioned. These videoclips may replace of a figure or figures of an article. They must include an embedded audio narration and subtitles in English. The proper formats are .avi, .mpeg and .mp4. The file size is restricted to a maximum of 40 MB. The runtime should not be longer than 10 minutes. To upload a video more than mentioned size, please contact with the editorial office.

7) Research Reporting Guidelines:

The authors should consult the following guidelines* in accordance with the type of research.

A. Consolidated Standards of Reporting Trials (CONSORT) for randomized trials.

B. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) for systematic reviews and meta-analyses.

C. Meta-Analysis of Observational Studies in Epidemiology (MOOSE) for observational studies of systematic reviews and meta-analyses.

D. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) for observational articles.

E. Standards for the Reporting of Diagnostic Accuracy Studies (STARD) for the studies of diagnostic accuracy.

**It is possible for the authors to reach these guidelines through internet.*

8) Plagiarism:

Manuscripts are investigated for possible plagiarism once they are accepted for possible publication. If an author receives a plagiarism notice regarding his/her manuscript, the corrections should be made within one month. If the Editorial Board detects any plagiarism on the second check after correction of the manuscript by the authors, the chief editor can reject the manuscript.

After Acceptance

Page proofs and corrections: Corresponding authors will receive electronic page proofs to check the copyedited and typeset article before publication. Portable document format (PDF) files of the typeset pages and support documents (e.g., reprint order form) will be sent to the corresponding author via e-mail. Complete instructions for downloading and printing the files and for faxing the corrected pages to the publisher will be provided with the e-mail. Authors without an e-mail address will receive traditional page proofs. It is the author's responsibility to ensure that there are no errors in the proofs. Changes that have been made to conform to journal style will stand if they do not alter the author's meaning. Only the most critical changes of the accuracy of the content will be made. Changes that are stylistic or are a reworking of previously

accepted material will not be allowed. The publisher reserves the right to deny any changes that do not affect the accuracy of the content. Authors may be charged for alterations to the proofs beyond those required to correct errors or to answer queries. Proofs must be checked carefully and corrections faxed within 24 to 72 hours of receipt, as requested in the cover letter accompanying the page proofs.

Publisher's contact details: Fax or e-mail corrected page proofs, and any other related materials to Journal Production Editor, Türk Nöroşirürji Derneği, Taşkent Caddesi 13/4, Bahçelievler-06500 Ankara, TURKEY.

Phone: +90 312 212 64 08 Fax: +90 312 215 46 26

Reprints: Reprint requests should be faxed or e-mailed with the corrected proofs by the corresponding author, if needed. Reprints are normally shipped 6 to 8 weeks after publication of the issue in which the item appears. Contact with the Publisher: Bulus Tasarım, Bahriye Üçok Caddesi 9/1, Beşevler, Ankara, TURKEY.

Phone: +90 312 222 44 06 Fax: +90 312 222 44 07

e-mail: bulus@bulustasarim.com.tr.

The price for 2 sets of Hardcopy journal + shipping is approximately* 100 TL (~35 EUR).

**Depend on shipping cost. Please contact Bulus Tasarım.*

Manuscript Checklist (before submission. For author reference only)

1. Title page

- Title (brief, definite, didactic)
- Corresponding author designated, and full mailing address included on title page
- E-mail address of corresponding author included on title page
- Running head
- Permission to reproduce copyrighted materials or signed patient consent forms
- Acknowledgements listed for grants, technical support, and corporate support on title page

2. Structured abstract with key words (250 words)

3. Manuscript text with page numbers (without author names and affiliations)

4. Figure legends

5. Tables (Word, Wordperfect)

6. Figures (jpeg)

7. Videos (avi, mpeg, mp4)

8. References double-spaced and cited in alphabetical order

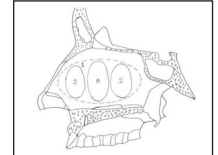
REVIEW

- 167** **Searching Evidences of Stroke in Animal Models: A Review of Discrepancies**
Ahmet Hilmi KAYA, Hakan ERDOGAN, Erol TASDEMIROGLU

ORIGINAL INVESTIGATIONS

- 174** **Chemotherapy for Adults with Malignant Glioma: A Systematic Review and Network Meta-Analysis**
Wen WANG, Guang SHI, Binbin MA, Xiangcheng HAO, Xin DONG, Bo ZHANG

- 182** **Late Postoperative Rhinological Complications After Microscopic Transnasal Hypophysectomy**
Lutfi POSTALCI, Ibrahim ERDIM, Bulent DEMIRGIL, Omur GUNALDI, Murad ASILTURK, Hakan DEMIRCI, Hakan KINA, Uzay ERDOGAN, Mine YAZICI, Erhan EMEL



- 187** **Traumatic Acute Subdural Hematomas: Analysis of Outcomes and Predictive Factors at a Single Center**
Fatih ALAGOZ, Ali Erdem YILDIRIM, Mert SAHINOGLU, Murat KORKMAZ, Mehmet SECER, Haydar CELIK, Cihat YEL, Yahya GUVENC, Ozhan Merzuk UCKUN, Firat NARIN, Ergun DAGLIOGLU, Ahmet Deniz BELEN

- 192** **Paradoxical Herniation after Unilateral Decompressive Craniectomy: A Retrospective Analysis of Clinical Characteristics and Effectiveness of Therapeutic Measures**
Huangyi JI, Weiqiang CHEN, Xiaohuan YANG, Jingfang GUO, Jin WU, Mindong HUANG, Chuwei CAI, Yingming YANG



- 201** **Management of Failed Cranioplasty**
Ramazan SARI, Mehmet TONGE, Fatih Han BOLUKBASI, Mustafa ONOZ, Ozdil BASKAN, Gokalp SILAV, Ilhan ELMACI

- 208** **Normal Pressure Pseudotumor Cerebri: A Series of Six Patients**
Mohamed AbdelRahman ABDELFAH

- 212** **Endoscopic Optic Nerve Decompression Through Supraorbital Keyhole Extradural Approach: A Cadaveric Study**
Xiaodong WANG, Wei WU, Hengzhu ZHANG, Qing LAN



- 217** **Long-term Surgical Outcomes of Spinal Schwannomas: Retrospective Analysis of 49 Consecutive Cases**
Erhan EMEL, Anas ABDALLAH, Ozden Erhan SOFUOGLU, Ali Ender OFLUOGLU, Muslum GUNES, Betül GULER, Bilge BILGIC

226

Management of Tethered Cord Syndrome in Adults: Experience of 23 Cases

Ozden Erhan SOFUOGLU, Anas ABDALLAH, Erhan EMEL, Ali Ender OFLUOGLU, Muslum GUNES, Betul GULER



237

Spine Tango in Turkish: Development of a Local Registry System

Alp Ozgun BORCEK, Erkut B. BULDUK, Soner CIVI, Hakan EMMEZ, Memduh KAYMAZ

245

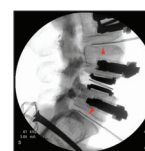
The Usefulness of Employing an Electronic Traction Table to Determine Flexibility in Adolescent Idiopathic Scoliosis

Erman CEYHAN, Onder Murat DELIALIOGLU, Kenan BAYRAKCI, Bulent DAGLAR, Alper DEVECI, Ugur GUNEL

252

Biomechanical Changes in Disc Pressure and Facet Strain after Lumbar Spinal Arthroplasty with Charité™ in the Human Cadaveric Spine under Physiologic Compressive Follower Preload

Jong-II CHOI, Se-Hoon KIM, Dong-Jun LIM, Sung-Kon HA, Sang-Dae KIM



259

Effect of Asiatic Acid on the Treatment of Spinal Cord Injury: An Experimental Study in Rats

Oktay GURCAN, Ahmet Gurhan GURCAY, Atilla KAZANCI, Salim SENTURK, Ebru BODUR, Ebru Umay KARACA, Omer Faruk TURKOGLU, Murad BAVBEK

265

Effects of 4% Icodextrin on Experimental Spinal Epidural Fibrosis

Turker KARANCI, Bilal KELTEN, Alper KARAOGLAN, Nilgun CINAR, Ahmet MIDI, Veysel ANTAR, Hidayet AKDEMIR, Zeynep Mine YALCINKAYA KARA

272

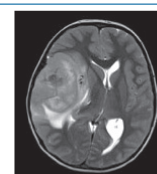
Supratentorial Parenchymal Ependymomas in Children: Experience with 14 Patients at a Single Institute

Luxin YIN, Chunde LI, Shiqi LUO, Zhenyu MA

279

Is the Knowledge Pertaining to Adult Glioblastomas Enough for Pediatric Cases? Prognostic Factors in Childhood

Burcak BILGINER, Sahin HANALIOGLU, Cezmi Cagri TURK, Firat NARIN, Kader Karli OGUZ, Figen SOYLEMEZOGLU, Nejat AKALAN



289

The Outcomes of 150 Consecutive Patients with Digital Nerve Injuries Treated in a Single Center

Sladana Z. ANĐELKOVIĆ, Aleksandar R. LESIC, Marko Ž. BUMBASIREVIC, Lukas G. RASULIC

294

Unilateral Subthalamic Nucleus Stimulation in the Treatment of Asymmetric Parkinson's Disease with Early Motor Complications

Michał SOBSTYL, Mirosław ZABEK, Artur ZACZYNSKI, Wojciech GORECKI, Zbigniew MOSSAKOWSKI, Grażyna BRZUSZKIEWICZ-KUZMICKA

301

Gamma Knife Radiosurgery for Arteriovenous Malformations: Clinical Series of 199 Patients

Ipek ARSLAN, Evrim TEZCANLI, Meltem YILMAZ, Olcay CIZMELI, Meric SENGOZ, Selcuk PEKER

CASE REPORTS

309 Acute Subdural Hematoma Immediately After Extended Transsphenoidal Surgery for Craniopharyngioma

Noriaki FUKUHARA, Hiroshi NISHIOKA, Shozo YAMADA

312 Imaging Findings of an Epidermoid Cyst with Malignant Transformation to Squamous Cell Carcinoma

Can OZUTEMIZ, Emel ADA, Ayca ERSEN, Ercan OZER

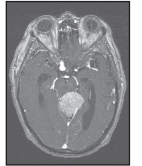


316 Staged Bilateral Nucleus Caudalis DREZ Lesioning for Persistent Idiopathic Facial Pain: Exceptional Case Report

Yucel KANPOLAT, Eyyub S. M. AL-BEYATI, Hakan YAKUPOGLU

321 Meningioma Associated with Brain Aneurysm: Report of Two Cases

Sayoa Alvarez de EULATE-BERAMENDI, Marco Antonio ALVAREZ-VEGA, Julio Cesar GUTIERREZ-MORALES, Antonio LOPEZ-GARCIA



LETTER TO EDITOR

324 Author's Reply to "Is It Safe to Evaluate Pedicle Screw Position with Postoperative Tomography"

Alp Ozgun BORCEK